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ABSTRACT

The 1980 Census of the United States is used, first, to illustrate the serious lag in employment performance of young black men relative to young white men and, second, to test for the importance of demand-side causes of this lag. Aggregate data for 94 standard metropolitan statistical areas (SMSAs) contain data on the annual hours worked in 1979 of black and white young men, along with other labor-market variables that reflect demand and supply forces. Disaggregate (or individual) data from the 1-in-100 Public Use sample contain personal information and hours worked for individuals. The individual records from young men in the 94 SMSAs are used with the SMSA market variables to check for the consistency of the effects of market variables on the employment of young black men with both types of data and with the two measures of labor supply. Main results are derived from the use of variation across SMSAs in the employment and wages of white youth as indicators of the demand conditions for black youth. It is estimated that feasible increases in these demand factors would lead to approximately a 25 percent increase in the employment of black youth. Eight tables present census figures. Two appendixes present definitions and supplemental information. (Author/SLD)

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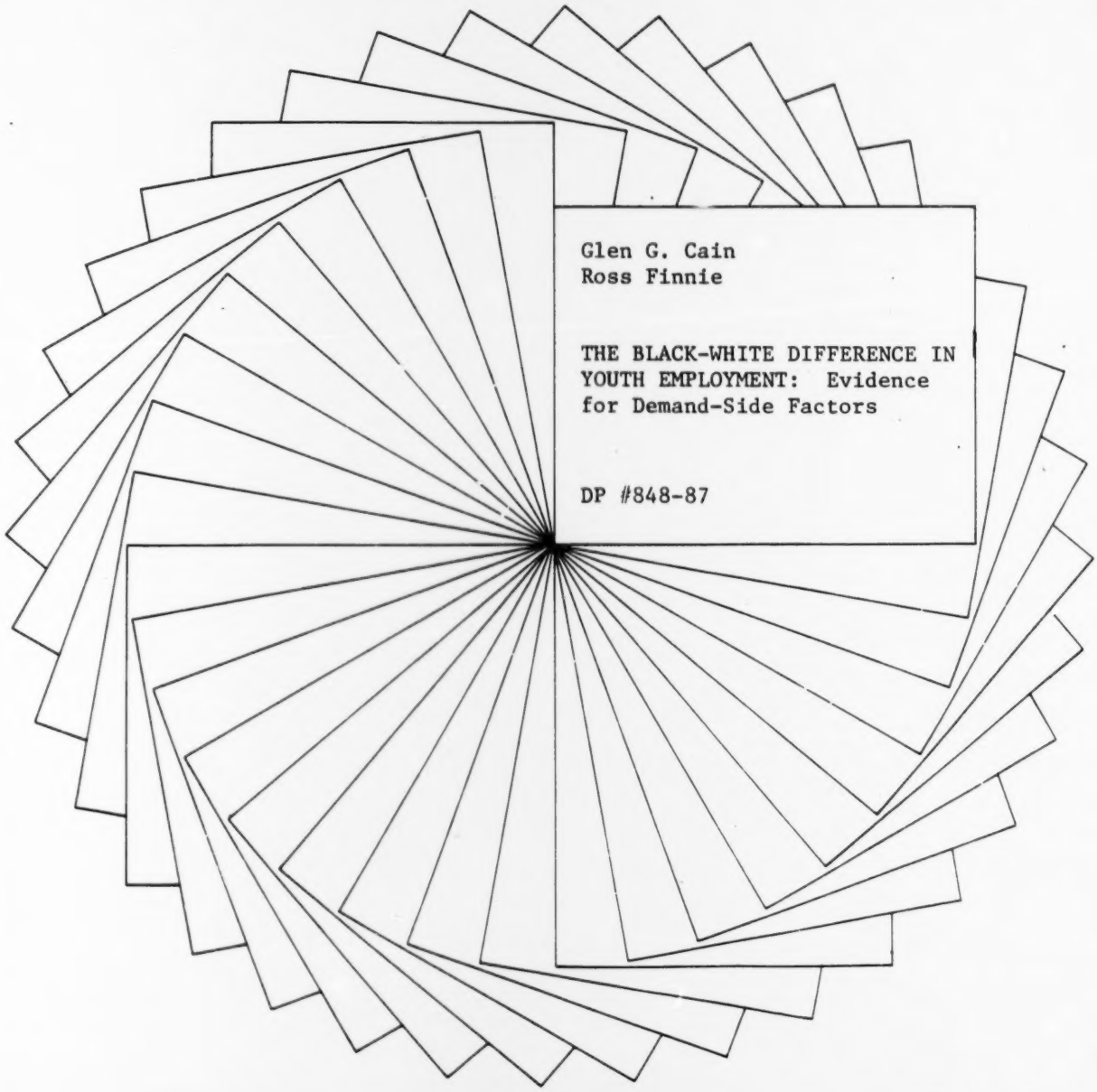

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THE BLACK-WHITE DIFFERENCE IN YOUTH EMPLOYMENT: Evidence for Demand-Side Factors

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The Black-White Difference in Youth Employment: Evidence for Demand-Side Factors

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Abstract

The 1980 Census of the United States is used, first, to illustrate the serious lag in employment performance of young black men relative to young white men and, second, to test for the importance of demand-side causes of this lag. In testing for the demand-side causes, we rely on two types of data from the Census. Aggregate data for 94 standard metropolitan statistical areas (SMSAs) contain data on the annual hours worked in 1979 of black and white young men, along with other labor market variables that reflect demand and supply forces. Disaggregate (or individual) data from the 1-in-100 Public Use sample contain personal information, including the labor force status during the census week in 1980 of the young black man and the young man's hours worked during 1979. We use individual records for young men who live in the 94 SMSAs and add the SMSA market variables to the individual's records. Thus, we are able to check for the consistency of the effects of the market variables on the employment of young black men with both types of data and with the two measures of labor supply—hours worked and labor force participation. Our main results are derived from our use of the variation across SMSAs in the employment and wages of white youth as indicators of the demand conditions for black youth, and we estimate that feasible increases in these demand factors would lead to about a 25 percent increase in the employment of black youth.

The White-Black Difference in Youth Employment: Evidence for Demand-Side Factors

by Glen G. Cain and Ross Finnie

INTRODUCTION AND SUMMARY

Comparisons of the labor market behavior of white and black youth are usually and often justifiably accompanied by gloomy and sometimes alarming comments about the extent to which blacks lag behind whites in employment and earnings. When Richard Freeman and David Wise write that "severe employment problems are concentrated among a small proportion of youth with distinctive characteristics," a conclusion concurred in by Albert Rees, every reader is aware that black youths are the problem group.[1]

Although there is widespread agreement about the seriousness of the labor market problems of black youth, there are conflicting views about the causes of the problems. Are their sources primarily on the demand side or supply side of the market? In a recent debate on the causes of the problem, William Julius Wilson emphasized the demand-side insufficiency of employment opportunities in the central cities where most black youth live, while Lawrence Mead emphasized the supply-side factors of low skills, low motivation stemming from unstable family structures, and the alternative income sources from public assistance programs.[2]

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[1]Richard B. Freeman and David A. Wise, eds., *The Youth Labor Market: Its Nature, Causes, and Consequences* (Chicago: University of Chicago Press, 1982), p. 15; Albert Rees, "An Essay on Youth Joblessness," *Journal of Economic Literature*, 24, June 1986, 624.

[2]See "The Obligation to Work and the Availability of Jobs: A Dialogue between

Finis Welch also stresses the supply side in his analysis of the lags in employment and earnings of black youth.[3] Specifically, Welch argues that the demand for black labor has generally risen during the last two decades, but the reservation wage of black youth (the minimum wage they are willing to accept) has risen faster, leading to declines in employment. Why the reservation wage rose is not well established, but Welch suggests schooling, welfare, work in the "underground economy" (including crime), and extended family living arrangements as reasons for the leftward shift in the supply curve of black youth.

This paper uses the decennial census of 1980 to address two issues mentioned above. In the next section we show a large disparity between the labor force status of white and black youth, a gap that has implications for racial inequality that extend beyond labor force status per se. The other sections of the article deal with the controversy over the causes of the demonstrated racial gap in employment and present evidence that demand factors are an important source. Using the variation across standard metropolitan statistical areas (SMSAs) in the employment and wages of white youth as indirect measures of variation in the demand for the labor of black youth, we show that feasible increases in these demand factors would lead to about a 25 percent increase in the employment of black male youth. The accumulated estimated effects of these and other variables related to demand could feasibly increase black employment by 40 percent.

Our estimates are derived from two bodies of census data: aggregate data

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Lawrence M. Mead and William Julius Wilson," *Focus*, 10, Summer 1987, 11-19.

[3]Finis Welch, "The Employment of Black Men," to appear in the *Journal of Labor Economics*, 1988.

from SMSAs and the individual records from the 1-in-100 Public Use Sample of the census. The census data are eight years old, but the comparisons we show reflect the current situation in which black youth lag far behind white youth according to several measures of performance in the labor market. The huge sample size available from the census is its primary advantage and is particularly useful for obtaining statistics for local labor markets. We focus on young men to avoid the complications that arise with the labor market behavior of women, for whom childbearing and child care sometimes compete with market work.

Our findings have the optimistic interpretation that policy actions on the demand side of the market for black youth can bring about important improvements. Even if there is complete acceptance of our findings, however, there remains a pessimistic view. The existing levels of black employment are so low that the feasible increases we project would close only about one-third of the gap between white and black employment among young men.

1980 CENSUS STATISTICS ON THE WHITE-BLACK GAP IN YOUTH EMPLOYMENT

Economists usually view leisure as a normal good and predict that a higher level of wealth or income, independent of one's labor supply, decreases one's time spent at work. The prediction is firmest when work and leisure are measured over one's lifetime as an adult. In focusing on young people, defined here as the age group between 16 and 24, we encounter three empirical findings where this prediction does not hold.

First, labor force participation rates (LFPRs) of young people have generally

increased from 1960 to 1980, a 20-year period when incomes and schooling attainments rose. This reverses the downward trend in LFPRs of young people in the decades before 1960. Second, the cross-sectional relation between the work rates of young people and their families' income, excluding the young person's earnings, is generally positive. This had been observed in the 1960 census,[4] and we find this relation with the 1980 census (see below). Third, white youth in recent years have had higher work rates than blacks of the same age, although white family incomes are higher. Tables 1-3 and 6, discussed below, show the higher work rates of whites in some detail for 1979 and 1980. This racial divergence is an outcome of the recent rising trend of work rates of white youth and a declining trend for blacks. From 1960 to 1980 the civilian LFPRs of the 16-to-19 age group rose from 56 to 62 percent for white men and declined from 57 to 43 percent for black men.[5]

All three findings have contributed to a favorable view of young people's engagement in market work, particularly when accompanied by increases in years of schooling. Employment appears to reflect "positive" opportunities rather than a "negative" need-to-work because of low income. Indeed, the low levels of market work by black youth have been referred to as a crisis.[6]

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[4]William G. Bowen and T. Aldrich Finegan, *The Economics of Labor Force Participation* (Princeton, N.J.: Princeton University Press, 1967), pp. 386–388.

[5]The figures are based on fixed weights for the age groups 16–17 and 18–19, using 1960 weights. The source is U. S. Department of Labor, *Employment and Training Report of the President, 1982* (Washington, D.C.: GPO, 1983) pp. 152-157.

[6]Richard B. Freeman and Harry J. Holzer, eds., *The Black Youth Employment Crisis* (Chicago: University of Chicago Press, 1986).

In Table 1 data from the 1980 census show the racial gap in labor force status among young men, using three measures: LFPRs, unemployment rates, and employment-to-population ratios. Higher LFPRs by whites among civilian youth are shown for all those who live at home (row 1), most of whom are single (row 2), for the minority of young men who are married (row 3), and for the still smaller percentage who live in group quarters and who mainly are college students (row 4). Black youth are more likely to be in the military than whites, so adding those in the military, who are all employed, slightly improves the black comparison overall, as shown in row 5. Even so, the LFPRs of whites are still substantially higher than those of blacks of the same age. The ratio of the black LFPRs to white LFPRs in row 5 range from .50 for 16-year-olds to .91 for those aged 23 to 24.

The unemployment rates for black male youth are about twice as high as those for whites of the same age (row 6). As a consequence, the ratios of employment to population are even less favorable for blacks than are the LFPRs. For example, the last row shows that 30 percent of young black men aged 23–24 are not working, compared with only 16 percent of whites of that age. Among 18-year-olds, 65 percent of blacks are without a job compared to 44 percent of whites.

The racial gap in labor force status also holds for young women. Comparable tabulations for women, which are not reported here, show that young black men have higher work rates than young black women, but that black men have lower work rates than young white women. For example, in the 1980 census 52 percent of 18-year-old white women but only 35 percent of 18-year-old black men report

Table 1

Labor Force Status of Young Men, by Race, Age, Marital Status, and Residential Status, 1980
(Percentages)

Marital and Residential Status	Age Group of Whites[a]						Age Group of Blacks					
	16	17	18	19	20-22	23-24	16	17	18	19	20-22	23-24
	Labor Force Participation Rates											
1. Living at Home, All[b]	36	51	67	78	85	91	18	29	55	58	74	82
2. Single[c]	36	51	66	76	81	87	18	29	54	57	71	78
3. Married[d]	(51)	67	90	94	95	96	19	46	63	81	91	92
4. Living in Group Quarters (GQ)[e]	...	(37)	26	30	40	48	...	(15)	27	27	31	39
5. Total: Home, GQ, and Military[f]	36	51	64	72	81	91	18	29	57	59	74	83
	Unemployment Rates											
6. Total: Home, GQ, and Military[f]	17	14	12	12	11	8	30	27	25	21	19	16
	Employment-to-Population Ratios											
7. Single, at Home[c]	30	43	57	66	71	79	13	20	32	42	54	62
8. Total: Home, GQ, and Military[f]	30	44	56	64	72	84	13	21	35	47	60	70

Source: Special tabulations from the 1980 Census, Public Use Sample.

Notes: All cells are based on more than 100 observations unless the number is in parentheses, which means that the number of observations is between 50 and 100. Cells for which the sample size is less than 50 are not tabulated and are shown by three dots. Total sample size = 269,000.

[a]Refers to non-Hispanic whites.

[b]Living at home includes all youth except for those in the military, living in group quarters (see note e below), or living in an institution.

[c]Refers to never married.

[d]Excludes divorced, separated, and widowed, who are not listed separately, although they are included in row 1.

[e]About 90 percent of the young people living in group quarters are in college.

[f]Includes all five marital statuses (see notes c and d) and all residence types except those living in institutions.

having jobs.[7]

In Table 2 we focus on single men, who represent over 80 percent of the 16-to-24 age group, and examine the relation between school enrollment and labor force status for whites and blacks. As shown in rows 1 and 2, the enrollment proportions are slightly higher for white young men, increasingly so for the relatively older age groups. In tabulations not shown, a consistent but modest rise in school enrollment is associated with higher family incomes of young people among both whites and blacks.

The LFPRs to concentrate on in Table 2 are blocked out in rows 3 to 6. Young people who are in school dominate the 16-to-18 age group, and we see that the LFPRs of whites are much higher than those of blacks. The comparison of employment-to-population ratios, which is not shown, would worsen the relative status of blacks because a much higher fraction of blacks is unemployed. For example, the employment-to-population ratio for enrolled 18-year-old men is 26 percent for blacks and 46 percent for whites, a ratio of .57. Another measure of labor supply that will be discussed below is total annual hours worked in 1979, which shows black-to-white comparisons that are similar to those for the employment-to-population ratios.

Rows 5 and 6 refer to unmarried youth who are not enrolled in school, and a more serious gap in racial outcomes is revealed. Consider those 19 to 24, for

[7]For an extended discussion of the labor force status of black and white youth of both genders, see Glen G. Cain, "Black-White Differences in Employment of Young People: An Analysis of 1980 Census Data," Institute for Research on Poverty Discussion Paper 844-87, University of Wisconsin-Madison, 1987, hereafter cited as "Black-White Differences."

Table 2

School Enrollment and Labor Force Status of Single Men
Aged 16-24, by Age and Race
(excluding persons in the military)
(Percentages)

	Group	Age:	16	17	18	19-21	22	23-24
					School Enrollment			
1.	Whites		94	87	67	45	34	24
2.	Blacks		93	84	64	35	23	16
					LFPRs by Enrollment Status			
	In School							
3.	Whites		34	48	51	49	55	63
4.	Blacks		17	26	33	41	50	57
	Not in School							
5.	Whites		52	65	83	90	91	92
6.	Blacks		27	37	57	68	74	75

Source: Special tabulations from the 1980 Census, Public Use Sample. Sample size = 200,000.

Notes: Single refers to those who have never married; white refers to non-Hispanic whites. Single persons in these age groups who are in the military constitute about 5 percent of the sample among black men and 3 percent among white men. If military personnel are included, the LFPRs for black men not in school are (row 6) 63 percent for 18-year-olds, 72 percent for 19- to 21-year-olds, 76 percent for 22-year-olds, and 76 for 23- to 24-year-olds. The corresponding percentages for white men are 84, 91, 91, and 92.

whom job holding is virtually imperative for long-run economic success. (Those aged 16 to 18 who are not enrolled have more time to get their bearings, one could argue, and they are in any case a small minority of their age group.) The LFPRs of whites aged 19 to 24 are uniformly high, around 90 percent. The LFPRs of blacks are much lower. By subtracting the LFPR from one hundred (which gives us the nonparticipation rate), we see that between 25 and 32 percent of black men aged 19 to 24 who were not in school were not holding jobs and were not looking for jobs during the survey week. The employment-to-population ratios accentuate the disparity. For example, for 22-year-old single men 80 percent of whites and only 56 percent of blacks who were not in school were employed in the survey week. (Statistics not shown.)

Adding those in the military to the civilian labor force figures improves the black-white comparisons, especially for those aged 18 to 21. For example, the LFPRs for 18-year-old unenrolled men become 84 percent for whites and 67 percent for blacks, as compared to the 83 and 57 percentages in Table 2. For the age group 19 to 21, the white and black LFPRs that include the military are 91 and 72.

On the other hand, adding young people who are married would worsen the labor force status of young black men relative to young white men, because white men are more likely to be married and, as shown in Table 1, married men have higher work rates than single men. Among 16- to 24-year-olds, 18 percent of white men and 11 percent of black men are married.[8] Young married couples

[8]Cain, "Black-White Differences," p. 3.

generally live separately from their parents and are usually self-supporting.

Interestingly, even among single persons the proportions of whites aged 22 to 24 who are not living in families are considerably larger than those of blacks.[9] One explanation is that the opportunities to attend college and to get a good job—opportunities more available to whites than blacks—are determinants of separate living arrangements by young unmarried persons. Access to good housing and higher parental income may also play a role. It is reasonable to conclude that income advantages, labor market success, and access to good housing increase the likelihood of marrying or alternatively of living separately from one's parents for young people beyond high-school age.

The relation between family income and the LFPRs for single young men who are aged 17 and 20 and who live with their parents is shown in Table 3. (The earnings of the young man are excluded from family income in this and the next table.) Most of the 16-to-24 age group are single and live at home, and the 17- and 20-year-olds represent a predominantly high-school group and a predominantly post-high-school group, respectively. Table 3 shows that the relative advantage of white youth in obtaining employment holds for each category of family income. The ratios of the black LFPR to the white LFPR for the entire samples are .56 and .81 for 17-year-olds and 20-year-olds, respectively, and the ratios for the separate income groups are only slightly higher.

A second interesting finding from Table 3 is that the LFPRs rise moderately with family income, up to $30,000, for all four race and age groups. (The positive

[9]Cain, "Black-White Differences," p. 23.

Table 3

Labor Force Participation Rates (in percentages) of Single Men Aged 17 and 20 Living with Their Families, by Race and Income of the Family (excluding the earnings of the young person)

Family Income (in $000's)	Age 17		Age 20		Percentage Distribution by Race[a]	
	White Men	Black Men	White Men	Black Men	W	B
≤0	31	22	(74)	56	1	1
0-15	46	26	80	62	19	51
15-20	50	28	83	69	12	14
20-25	52	31	83	71	14	11
25-30	53	34	85	72	14	8
30+	52	33	79	72	40	15
All Incomes	50	28	81	66	100	100

Source: Special tabulations from the 1980 Census, Public Use Sample. Sample size = 60,000.

Notes: All cells have more than 100 observations, unless the number is in parentheses, which means that the number of observations is between 50 and 100. Single refers to never married. The young men are also reported to be the child of the head of the household. White refers to non-Hispanics.

[a]The distribution refers to whites (W) and blacks (B) of both age groups.

relation between LFPRs and family income also holds for young women. See Cain, "Black-White Differences," p. 31.) It should be noted that the positive relation between LFPRs and family income emerges despite the facts that LFPRs are lower for enrolled youth (see Table 2) and that school enrollment is positively related to family income, as discussed earlier. The LFPRs do show a slight decline for the highest income group, $30,000 and over, compared to the income groups reporting $25,000 to $29,999, which reflects the very high proportions of young people in the highest income families who are enrolled in school or college.[10] Nevertheless, the LFPRs of the youth in the highest income group generally exceed the average LFPRs for all incomes. In the statistical analysis reported below we use these data to test for the effect of family income on the work of black youth and find that the effect is positive and significant but very small quantitatively. (See Table 8 below.)

An explanation for the positive relation between a youth's employment and his family's income is that young people with affluent parents have more and better job opportunities available as a consequence of living in more prosperous communities and having parents with good connections. This hypothesis is difficult to test directly, because we cannot identify job availabilities or job offers with the data at hand. We can measure wages as an indicator of demand conditions, and as shown in Panel A of Table 4 the hypothesis is moderately supported. The average hourly wage for working youth is generally higher for young people whose family incomes are higher.[11] For brevity Table 4 again deals with selected

[10]Cain, "Black-White Differences," p. 27.

[11]The average wage per hour is computed by summing the total earnings of work-

Table 4

Average Wage Rates and Average Annual Hours Worked in 1979 for Employed Single Men Aged 17-18 Enrolled in School, and Employed 20-Year-Old Single Men Not Enrolled, Living with Their Families, by Race and Income of the Family (excluding the earnings of the young man)

Family Income (in $000's)	Panel A. Average Wage Rates (per hour) in 1979[a]			
	Age 17-18, Enrolled		Age 20, Not Enrolled	
	White Men	Black Men	White Men	Black Men
0-15	$3.10	$3.25	$4.06	$3.62
15-20	3.07	3.49	4.09	3.91
20-25	3.17	3.15	4.51	3.98
25-30	3.16	3.27	4.51	4.04
30+	3.39	3.61	4.70	4.45
All Incomes	3.24	3.37	4.42	3.94
	Panel B. Average Annual Hours Worked in 1979 for Young Men Who Worked			
0-15	624	506	1561	1239
15-20	631	528	1592	1331
25-25	636	501	1564	1369
25-30	620	535	1625	1334
30+	599	524	1616	1322
All Incomes	615	515	1594	1288

Source: Special tabulations from the 1980 Census, Public Use Sample. Sample size = 35,000.

Notes: Single refers to never married, and white refers to non-Hispanics. The young men are also reported to be the child of the head of the household.

[a]See text footnote 11 for a definition of the average wage rate.

age groups, this time combining 17- and 18-year-olds to achieve a more reliable estimate of wage rates. This sample is restricted to those who worked in 1979.

If we assume that the relatively high wage available to children in affluent families is an indicator of better job opportunities generally, this helps to explain why the well-off children have higher labor force and employment rates, despite the facts that they are also more likely to be in school and presumably have less "need" for earnings. But is the higher wage merely an effect, rather than a cause, of working more? Evidence against this interpretation, shown in Panel B in Table 4, is that the hours of work *among the working youth* are *not* positively related to family income. So we are not just observing higher wages in full-time (or long-hour) jobs. Instead, the interpretation suggested is that the availability of higher wages for similar amounts of hours worked induces more young people to take jobs and thereby increases LFPRs.

Table 4 is restricted to those who worked in 1979, and the racial disparities in hours of work are shown to be much less among working youth than among all youth. For the two age groups, 17–18 and 20, the averages of hours worked by black men are slightly more than 80 percent as large as the averages for white

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ing youth in 1979 and dividing by the total hours worked in 1979. Hours of work is a product of weeks reported working and usual hours worked per week. This average is thus essentially weighted by the hours worked. A worker who works 40 hours a week contributes 8 times as much to the average as a worker who works 5 hours a week, assuming both worked the same number of weeks. It is preferred to an average computed by summing each worker's wage, obtained by dividing the worker's earnings by the worker's hours, and then dividing by the total number of workers, because too often reporting errors in earnings or hours produce unbelievably large or small wages, particularly among part-time workers.

men, using the figures for the entire sample in the bottom row of the table. This ratio of .8 is considerably higher than the .6 ratio (or lower) for LFPRs or the employment-to-population ratios. Evidently the important source of the black youth's disadvantage in employment is in getting a job in the first place.

The fact that the percentage of 17- and 18-year-old blacks who did work in 1979 is so much smaller than the percentage of whites may be the reason for the surprising result in Table 4 of generally higher average wages for blacks than whites in the young age group. There may be more selective "creaming" of the most skilled black youth relative to the selection among white youth. Another explanation, which we prefer, is that the black wage advantage merely reflects measurement error. There is considerable error in measuring the wages of part-time young workers, who dominate the group of working 17- and 18-year-olds. Wages for full-time workers (see Table 5) consistently show a sizable wage advantage to white workers.

Table 5 provides more information about wage rates of the young people examined in this section. Here, the average hourly wage rates are for young, full-time, year-round workers who are not enrolled in school. Wages are shown for men and women aged 16 to 24 and by single year of age between 18 and 24, where the populations of workers are reasonably large. The wages of white men are about 20 percent larger than those of black men of the same age.

Two points about the wage advantages of whites are noteworthy. A larger fraction of white men and women are working full time, and their wages are higher despite the fact that their population is probably less selective than is

Table 5

Average and Median Hourly Wage Rates in 1979 of Not Enrolled, Full-Time, Year-Round Young Workers by Race, Gender, and Age, and Median Hourly Wage Rates for All Workers Aged 16-24

	Average Wages of Full-Time, Full-Year Workers, Ages:								Median Wages	
Group	18	19	20	21	22	23	24	All Ages 16-24	Full-Time Workers 16-24	All Workers 16-24
White Men	$3.21	$3.80	$4.38	$4.77	$5.18	$5.57	$5.90	$5.05	$4.85	$4.20
Black Men	2.90	3.25	3.62	3.82	4.10	4.48	4.78	4.10	4.15	3.65
White Women	2.82	3.31	3.67	3.90	4.12	4.40	4.68	4.08	3.96	3.56
Black Women	2.87	3.07	3.55	3.60	3.82	3.98	4.24	3.83	3.79	3.37

Source: Special tabulations from the 1980 Census, Public Use Sample. Sample sizes: 60,000 for columns 1-7; 75,000 for columns 8-9; 250,000 for column 10.

Notes: White refers to non-Hispanics. Full-time refers to workers whose usual weekly hours of work exceed 35 hours and who worked 48 or more weeks in 1979.

that for blacks. Second, all the youth represented in the table, except for the last column, are full-time, year-round workers who are not enrolled in school, so their wage is more likely to measure what they *can* earn, not what they, in some sense, choose to earn.[12] The wages in Table 5 are better indicators of the wages available to the white and black young men than the wages shown in Table 4, where the main purpose was to show the relation of youth wages to their family incomes.

In summary, the gap in employment between white and black youth is shown by the 1980 census data to be large and related to family incomes, personal earnings, school enrollment, marital status, and living arrangements in ways that exacerbate the economic inequality between the races. We interpret both the relation between family income and the employment of young men and the difference in wages between white and black youth as indicating an important role of demand factors in explaining the racial gap in employment. But this evidence is weak and indirect. We turn to census data on local labor markets to examine the demand hypothesis more thoroughly.

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[12] Another way to make this point is to note that we seek to measure differences in wages offered to workers, holding constant the number of hours the workers "desire" to supply. Using full-time, year-round workers gives us a way to obtain such a wage. The wages of all workers, in contrast, will inevitably represent a mix of full- and part-time workers. Typically, part-time jobs pay a lower wage, and when workers choose part-time jobs they are implicitly choosing to accept a lower wage.

DEMAND SOURCES OF THE LOWER EMPLOYMENT OF BLACK YOUTH

Information about demand-side sources for the low levels of employment and earnings can in principle be put to policy use in a straightforward manner: increase the jobs and raise the wages offered to black youth. Such demand policies can be implemented in the near term in the public or private sector by a variety of methods, although their cost effectiveness would need to be considered. Supply-side policies, like increasing schooling or training or attempting to deal with the family structure, would require more time and may be less tractable.

How might an economist obtain information about demand and supply factors in the youth labor market that would be useful for policy purposes? One approach is to create variation in the factors of interest by programs of intervention in labor markets. The ideal design calls for random assignments of the programs across markets, followed by measurement of how the employment and earnings of young people respond to the programs. Such experimental designs are rare and not part of our data.

The census data we use provide "natural" variation among standard metropolitan statistical areas (SMSAs), and we view the SMSAs from the 1980 census as constituting a sample of separate labor markets for young people. The implicit population is that of all SMSA civilian labor markets in recent past and future years. For each SMSA of sufficient size we construct a measure of the hours worked in 1979 by white and black young men aged 16 to 21. There are 102 SMSAs where the population is large enough to permit separate statistics for the two racial groups. Seven of these SMSAs have large military populations

that distort the data describing young men's labor force behavior, and another SMSA, Macon (Georgia), has missing information for a key wage variable. We are left with 94 SMSAs to use in our analysis.

In Table 6 we first show summary statistics for the samples of both 102 and 94 SMSAs; see Panel A. The averages of hours worked among SMSAs include both (1) the variation in *the proportion of young men* who worked at all during the year and (2) variation in *hours of work* of those who did work. Wide variation in hours worked by individuals is expected, but we are here dealing with overall market averages, which turn out to have a surprisingly wide variation. The most striking summary statistic is, however, the low average of hours worked by blacks. The mean of those averages over the 102 SMSAs is 297 hours per year, which amounts to only six hours of work per week. This could be achieved by 10 weeks of summer work at a part-time job of 30 hours per week, without any market work in the other 42 weeks in the year. Because the average is for a group that includes young men aged 19 to 21, the figure of 297 is low indeed. Excluding the seven "military" SMSAs (and Macon) lowers the black mean to 279, which amounts to slightly more than five hours per week.

The SMSA means of average hours worked in 1979 by white men aged 16 to 21 are 656 (or 644)— over twice as large as those for black youth. In fact, once the three SMSAs with large military populations—Anaheim, San Diego, and Tacoma—are excluded from the larger sample, there is not a single SMSA of the remaining 99 for which the black average is as high as the overall mean (or median, 655) of the white averages.

Table 6

Average Hours Worked by Black and White Men Aged 16-21 and Other Labor Market Variables for Selected Standard Metropolitan Statistical Areas (SMSAs): 1980 Census

	Variables (Age Groups in Parentheses)								
	Average Annual Hours Worked in 1979		Ratio of Black to White Hours	Black Unem. Rate in SMSA (%)	Black Households Receiving Pub. Assist. (%)	Segregation Index (see notes)	Average Years of Schooling Completed		Black Men in Military as Percentage of Black Labor Force (16-19)
	Black Men (16-21)	White Men (16-21)					Black Men (20-24)	White Men (20-24)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Panel A. Means and Standard Deviations of Selected Variables for 102 and for 94 SMSAs									
Mean, 102 SMSAs	297	656	.45	11.7	20.6	2.85	14.1	14.9	
(stand. dev.)	(126)	(119)	(.12)	(3.8)	(4.7)	(1.79)	(.4)	(.4)	
Mean, 94 SMSAs	279	644	.43	11.8	20.8	2.95	14.1[a]	14.9	
(stand. dev.)	(92)	(105)	(.11)	(3.9)	(4.6)	(1.82)	(.4)	(.4)	
Panel B. Five SMSAs with Largest Black Population (in Addition to New York--see Panel C)									
Chicago	177	679	.26	14.9	27.1	2.91	13.8	15.2	4
Los Angeles	208	546	.38	10.4	23.3	1.49	14.4	15.2	<1
Detroit	199	651	.31	21.9	27.1	6.88	13.8	14.6	<1
Philadelphia	155	508	.31	15.7	28.4	2.72	13.8	15.0	7
Washington, D.C.	301	627	.48	7.3	12.0	6.27	14.1	15.5	5
Panel C. SMSAs with Fewest Average Hours Worked by Black Young Men									
Buffalo	115	507	.23	19.8	30.2	3.64	13.9	15.0	<1
New York	121	337	.36	10.8	24.1	1.31	14.3	15.4	<1
Youngstown	130	540	.24	23.3	27.8	4.36	*	14.6	0
Harrisburg	138	676	.20	11.5	20.9	9.98	*	14.9	2
Jersey City	144	390	.37	12.5	24.2	2.94	*	14.7	3
Panel D. SMSAs with Greatest Average Hours Worked by Black Young Men									
Tacoma	877	719	1.22	15.0	16.3	1.54	*	14.5	71
San Diego	806	892	.90	12.2	20.5	1.67	14.2	15.0	66
Anaheim	662	655	1.01	6.5	7.4	.98	*	15.0	38
Las Vegas	559	799	.70	9.5	12.2	1.33	*	14.6	7
Oklahoma City	505	827	.61	6.4	17.6	1.73	14.2	15.0	2
Phoenix	478	733	.65	10.2	16.0	1.55	*	147	7

Notes on next page

Table 6, Continued

Explanatory Notes:

1. The 102 SMSAs are all SMSAs reporting separate labor force statistics for blacks. The 94 SMSAs exclude 7 with military populations in which the percentage of white or black youth aged 16-19 who are in the labor force is 30 or more. Also, one SMSA, Macon, is excluded because of a missing wage variable.

2. The black unemployment rate in column (4) is for the total black male civilian labor force in the SMSA.

3. The segregation index is calculated as the black percentage of the SMSA population living in the central city divided by the corresponding white percentage.

4. Average years of schooling are not available for black youth in SMSAs designated by an asterisk (*) in this column, because the sample size was too small for this statistic. Separate educational attainment variables by race are not reported in the aggregate census statistics used for the labor force variables.

[a]The mean for blacks is calculated for the 44 SMSAs for which the sample size of black young men was large enough.

In Panel B of Table 6 we list the five SMSAs that, along with New York (in Panel C), have the largest black populations. Only one, Washington, D.C., has an average above the black means of 297 and 279. The average hours worked per week by young black men in New York and Chicago is only three hours. In Chicago the ratio of black-to-white average hours worked per year is .26 (column 3), which seems shockingly low.

Reporting the hours worked for those who are out of school would produce larger averages, but school enrollment explains no part of the gap in black hours of work, since a smaller proportion of black youth are enrolled in school. It is also likely that white youth are attending school more days per year and are more likely to be enrolled in a four-year college than in a two-year college compared to blacks.

School enrollment among teenagers is positively correlated with family income, and lower black family income is one explanation for the white-black difference in schooling. But the lower relative income of black families adds to the puzzle of the white-black gap in hours worked. As discussed earlier, family income, not including the income contributed by the young person, is a supply-side influence that is expected to be negatively related to labor supply. When we see family income positively related to the labor supply of young people, we may surmise that the income variable is representing some mix of demand, skill, and, perhaps, tastes factors.

The SMSAs in Table 6 that show the lowest levels of work by both white and black youth (Panel C) are those with industrial structures that are dominated by

heavy industry. Buffalo and Youngstown are examples from among the SMSAs listed. The SMSAs with the highest levels (Panel D) tend to have more service industries. (Anaheim, San Diego, and Tacoma are special cases because of their large military populations; see column 9.)

Other characteristics of the SMSAs that are presented in Table 6 suggest that area unemployment, housing segregation, and possibly public assistance exert negative effects on the work effort of blacks. These ideas are discussed and tested below.

Two findings from Table 6 speak to the demand-side hypothesis: (1) the wide variation in average hours worked across SMSAs, and (2) the initial evidence from columns 1 and 2 for a positive correlation between white and black employment levels across SMSAs. The first finding challenges us to explain these large differences. Even when we exclude the seven SMSAs with relatively large military populations, the SMSA average of hours worked by black youth varies from 186 to 370 hours over the span of one standard deviation below and above the mean. The full range is from 115 hours in Buffalo to 559 hours in Las Vegas. The second finding offers support, as will be argued below, for the hypothesis that demand factors are an important source of the variation in the employment levels of blacks.

Unfortunately, the variables from the census, including those shown in Table 6, are not easy to translate into policy-relevant estimates of demand and supply parameters. Variation in wage offers for given qualities and quantities of youth labor are not available, partly because measures of the quality (or human

capital) of the supply of labor are not available. Clearly, the wages *obtained* by workers reflect a mixture of these demand and supply sources. Measuring a wage variable for young people that is exogenous to their labor supply is particularly difficult. We have already noted that a wage from the census data that is defined as reported earnings in 1979 divided by the reported hours worked in 1979 is particularly error-laden when part-time jobs are common, as they are among young people. Restricting the wage to full-time, year-round workers reduces the error, but jobs for these workers tend to be in manufacturing at relatively high wages, and such jobs are not widely available to most young people, and most of the young people who are in school do not seek these jobs. Minimum wage laws are another impediment, because a relatively high and strongly enforced minimum wage could create a supply-side constraint in the market for teenage labor that might reduce work levels rather than indicate a demand-side incentive to work more.

There are other obstacles to directly estimating demand and supply functions. These include the tasks of controlling for nonpecuniary aspects of the jobs available to young people, distinguishing between transitory and permanent (or "normal") variation in local demand conditions, and dealing with the endogenous alternative choices of schooling and participation in the "underground economy." We are willing to settle for indirect evidence of demand-side causes of the employment variation among black youth.

Specifying the Models for Estimation

The first model we use for empirical analysis has SMSA averages as the units of observation. The second model uses individuals as units, but each person is identified with an SMSA of residence, and SMSA variables are also used. This section is devoted to the first model, because our focus is on marketwide variables as the explanatory variables with the most policy significance.

Our basic idea for testing the hypothesis about demand-side causes of the variation in black youth employment across SMSAs is simple. Given the assumptions to follow, the average of hours worked by white males aged 16-21 in an SMSA is considered to be an indicator of the unobservable demand for youth labor. Using regression analysis, we find that the average number of hours worked by black youth is positively correlated with the average for white youth, examine the magnitude of this relation, test for whether it is attributable to factors other than demand conditions, and offer our final interpretations.

In our basic regression model for the SMSA data, average hours of work by young black men aged 16-21 are regressed on the following six principal independent variables: (1) the average hours of work by white young men aged 16-21; (2) the area unemployment rate for blacks; (3) the average wage earned by white young men; (4) measures of racial residential segregation in the area; (5) the extent of public assistance received by black families; (6) a measure of the age composition in the area.

The critical assumption in our strategy is that the variation in average hours worked of white males aged 16-21 is mainly attributable to variation in demand

conditions, given our controls for several supply factors. Underlying this assumption are the following points.

1. The SMSA residence of young people is exogenous. We assume, in other words, that they live where their parents happen to live and that the SMSA where their parents live does not depend on the children's employment. This is more likely to hold for youngsters aged 16 to 18 than for those 19 to 21, and we have evidence for younger and older age groups separately. Within an SMSA we assume that the city-suburban pattern of racial segregation is also exogenously imposed on black youth.

2. The variation in demand conditions faced by young people mainly reflects an industrial structure that is mostly exogenous with respect to the supply of teenage labor. In areas like Pittsburgh and Gary, with much heavy industry, the demand for youth labor is relatively low, and in areas with a relatively large number of retail, restaurant, recreational, and other similar types of service businesses, like Las Vegas and Washington, D.C., the demand for youth labor is relatively high.

3. Based on 1 and 2 above, our argument for demand-side causes of the variation in employment of black youth is a version of the "spatial-mismatch" hypothesis.[13] According to this hypothesis, the areas where blacks live have fewer jobs available to young people compared to the areas where whites live. Its usual focus is the labor market within an SMSA, contrasting the lack of jobs in the

[13]For a discussion of this hypothesis and citations to the literature on it, see David T. Ellwood, "The Spatial Mismatch Hypothesis: Are There Teenage Jobs Missing in the Ghetto?" in Freeman and Holzer, pp. 147–185.

central city, where blacks are concentrated, with the relative abundance of jobs in the suburbs. Our hypothesis has a wider context and also draws on the contention of a relative scarcity of jobs for youth, particularly blacks, in the SMSAs where blacks live in disproportionate numbers, such as New York and Chicago, as compared to the SMSAs where whites live in disproportionate numbers, such as Minneapolis and Denver. Note that our assumption of residential exogeneity, expressed in 1 above, does not imply that residence is exogenous *within a central city*, and it is this latter assumption that seems to us to be the critical weakness in David Ellwood's careful examination of the spatial-mismatch hypothesis using neighborhood data within Chicago. Although he rejects the hypothesis, his model and Chicago data seem to conflict with his stated assumptions that residence is constrained, capital is immobile, and commuting costs are nontrivial.[14] In particular, what are the constraints that keep blacks who live in one mainly black neighborhood of Chicago from moving to another mainly black neighborhood of Chicago? Constraints on moving to the suburbs as well as on moving to a different SMSA, on the other hand, are well understood.

4. In addition to using the average hours worked by white youth to indicate demand conditions for black youth, we also measure wage rates for young white men in these SMSAs for which we have sufficient numbers of observations. We assume that this wage rate is unaffected by the labor supply of young black men and is a suitable proxy for the wage facing young black men. (The average black wage is more difficult to obtain for many SMSAs and would be, we believe,

[14]Ellwood, p. 152.

endogenous to the labor supply of black youth. Although the level of wages in the SMSA is lower for blacks than whites, the two wage levels should be positively correlated.)

5. Transitory variation in local demand conditions is controlled for by various area unemployment measures.

6. The exogenous supply-side factor of the age composition of the population is controlled for by the fraction of the population over 16 years of age that is between 16 and 19.

7. Segregated neighborhoods curtail the employment opportunities of black youth because the level of income in all-black neighborhoods is low and because businesses are less likely to locate there. The cost of commuting deters young people from taking jobs outside their own communities. We take account of this factor with variables measuring (a) the proportion of blacks living in the central city relative to the proportion of whites living in the central city, and (b) the absolute size of the black population in the SMSA. The problem of residential segregation is longstanding, however, and it is less amenable to immediate policy remedies than other demand-side interventions.

8. Welfare (or public) assistance is an alternative source of income that is more commonly received by blacks than whites. Being in a family that receives welfare may lower a young person's motivation to work, but it is not obvious that the monetary incentives to work are diminished. Families on welfare are poor, and the earnings of the young person will usually not reduce the welfare

payments to which his family is entitled if he had no earnings.[15] The variable we use to control for the receipt of welfare is the percentage of black households in the SMSA that report receiving income from public assistance. Note that variation in this percentage may be causally dependent on the level of demand for black labor, and therefore the variable is not simply controlling for supply-side variation in tastes for work by black youth.

9. Schooling has two main influences in explaining the variation in employment among SMSAs. As an alternative to market work, schooling attendance is expected to be negatively associated with employment. As a measure of the stock of human capital, however, schooling attainment, including its quality, increases the productivity of (and therefore the demand for) the workers. We do not have measures of the quality of schooling, and we mainly bypass the endogeneity of school attendance in ways discussed below.

10. Tastes for work are basically assumed to be unvarying, on average, among the SMSAs, particularly after we have included variables measuring welfare recipiency and segregation. Physical traits and mental capacities are similarly expected to have minimal variation because our units of observation are averages for the aggregation of young men in large SMSAs.

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[15] Although the earnings of adult members usually reduce the welfare payments to which the family is entitled if there were no earnings, this "tax" on earnings does not apply to a young family member who is a full-time student. His earnings are exempt. Moreover, if the young family member is over 18 and not in school, he does not have to be considered part of the household for purposes of determining the household's welfare payment. See Robert Lerman, "Do Welfare Programs Affect Schooling and Work Patterns of Young Black Men?" in Freeman and Holzer, pp. 412-413.

Results of Regression Analysis with Aggregate SMSA Data

The results of estimating how SMSA variables affect the average hours of market work by black youth among 94 SMSAs are shown in Table 7. Because we seek to explain civilian employment levels of blacks, we have excluded seven SMSAs in which the military population is 30 percent or more of either the white or black labor force among 16- to 19-year-olds: Anaheim, Augusta (Ga.), Charleston (S.C.), Norfolk, San Antonio, San Diego, and Tacoma. Macon is also excluded because no wage variable was available.

In all the regression models, we see that the average of annual hours worked by white youth has a highly significant, positive effect on black hours of work. To illustrate, the coefficient from model 1 shows that where white hours worked are one standard deviation (or 105 hours) higher—equal to 749 hours, which is 16 percent higher than the white mean of 644 hours—the predicted increase in black hours worked by young men is 49 hours, which is an 18 percent increase over the black mean of 278 hours. (Elasticities, calculated at the means of the dependent and independent variables, are shown in brackets in the table.) Our contention is that variation in the hours worked by white youth mainly reflects variation in the industrial structure of the area, given the controls for (a) t.. nsitory demand conditions, using the civilian unemployment rate in the SMSA for blacks, (b) residential segregation, and (c) the size of the black population. (See Appendix 1 for definitions and the sources of the variables.)

Unfortunately, we cannot infer any specific policy intervention from the above finding. Indeed, the direct translation of the regression coefficient of white hours

Table 7

Regression Estimates of the Effects of Market Variables on Young Black Men's Average Annual Hours of Work in 1979 for 94 SMSAs

(Coefficients; Standard Errors in Parentheses; Elasticities at the Mean in Brackets)

	Model 1	Model 2	Model 3
R^2	.64	.67	.70
Constant term	302.8***	332.1***	38.4
	(90.1)	(137.0)	(256.2)
Average annual hours worked, young white men	.47***	.42***	.42***
	(.06)	(.06)	(.06)
	[1.08]	[.98]	[.96]
Black unemployment rate (%)	-7.5***	-4.9***	-5.2***
	(1.6)	(1.9)	(2.2)
	[.32]	[.21]	[.22]
Index of segregation	-8.5***	-8.5***	-11.3***
	(3.3)	(3.3)	(3.2)
	[.09]	[.09]	[.12]
Black population (log)	-18.2***	-16.8***	-23.8***
	(5.9)	(6.4)	(5.8)
	[.07]	[.06]	[.09]
Black households receiving public assistance (%)		-4.0**	-4.7***
		(1.6)	(1.6)
		[.30]	[.35]
Youth as percentage of population		5.4[a]	-12.5[b]
		(8.6)	(11.8)
		[.13]	[.26]
Years of schooling of white men, 20-24			25.3*
			(18.2)
			[1.35]
Average wage of young white men			29.6***
			(11.1)
			[.48]

Notes on next page

Table 7, Continued

Explanatory Notes:

Note: Definitions, sources, means, and standard deviation of variables are given in Appendix 1.

One-tail level of statistical significance: *** = significant at .01 level, ** = .05, and * = .10.

[a]Black youth composition.

[b]Total youth composition.

worked gives the nonsense result that employing a white young man for an additional hour of work "leads to" an additional half-hour of work by a black young man. Obviously, this not our interpretation. Rather, it is that an expansion in, say, the service industries in the area, which would increase the employment of white youth, will lead to additional jobs for black youth. In this light, the estimated coefficient of .47 shown in model 1 is surely an underestimate of the effect on hours worked of increasing employment opportunities for black youth. One reason is that the demand conditions causal to the hours worked by white youth are an imperfect measure of the demand conditions specifically relevant to black youth. A second reason for the underestimate is that higher levels of employment of white youth could result from hiring them in place of black youth. Since white and black labor are more likely to be substitutes than complements, the positive regression coefficient of white hours of work appears to reflect demand conditions that overpower the substitution effect. An increase in demand aimed specifically at black youth would have a larger positive effect.

Model 3 in Table 7 contains the most complete regression model for the 94 SMSAs. The average wage for white men aged 18-22, which is another indicator of demand conditions, is positively and significantly related to black hours of work. (See footnote 11 for an explanation of how this wage is calculated.) A one-dollar increase in the SMSA average wage is predicted to increase the average employment of black youth by 30 hours per year. The elasticity of hours of work by black young men with respect to wages, assuming a perfect correlation between black and white wages, is .48, evaluated at the means of the dependent

and independent variables.[16] (The mean of the white average wage across SMSAs is $4.51, which is equivalent to $6.21 in 1987 prices.)

The remaining variables in the regression models in Table 7 show no surprising results. A one-percentage-point decrease in the black unemployment rate in the SMSA, which has a mean of 11.8 percent, is associated with a modest increase of five hours of work (see model 3.) The percentage of black households receiving public assistance has a moderately large effect on black hours worked: an increase of one standard deviation in this percentage, 4.7 percentage points, is predicted to decrease the average of black hours by 22 hours per year. As noted above, the percentage of black households receiving public assistance will partially reflect (and be caused by) low levels of black employment as well as being in part a cause of these low levels, so it is difficult to translate its coefficient into predictive or policy terms.

The significant negative effects of the absolute size of the black population and the degree of segregation in the SMSA are expected, but they also have ambiguous interpretations. A 10 percent increase in the black population is predicted to decrease average black employment by about two hours per year, which is a small effect. The sign and significance of this variable remain even when the logarithm of total population is included (results not shown). The index of segregation is constructed so that it may be interpreted as the probability that a black family lives in the central city portion of an SMSA relative to

[16]Of course, the unobserved wage of black youth is not perfectly correlated with the wage of white youth. If we assume random errors in the observed white wage as a measure of the black wage, then the black labor supply elasticity would be greater than .48.

the probability that a white family lives in the central city. The mean of the ratio is 3.0. A one-standard-deviation decrease in the degree of segregation, 1.8, would raise black employment by about 20 hours. To some extent these variables provide indirect evidence for the effects of fewer job opportunities or of more costly access to jobs for black youth. The variables may also reflect a prevailing mood of economic pessimism, which in turn may induce withdrawal from the labor force.

The age composition in the SMSA, using either the proportion of black youth or the proportion of all youth, has no significant effect in the regressions (see models 2 and 3). Finally, the exogenous proxy-variable for school attainment and enrollment of black youth, which is the average years of schooling completed by white men aged 20-24 in the SMSA, is positive but is not significantly related to hours worked by black young men. (Our trials with the corresponding measure of black educational attainment for the 44 SMSAs with sufficient numbers of observations gives us a similar null effect.)

Our main conclusion is that the employment of black youth responds positively to an increase in demand and that this response is sizable, a conclusion based primarily on the fact that the white youth hours-worked variable has a highly significant and stable coefficient of about .4 (and an elasticity of about 1.0) in all the models. Supporting our conclusion about the white hours-worked variable are the following points. First, we have calculated various regressions in which the dependent variables are the labor force participation rates in the SMSA at the time of the census, April 1980, for black youth aged 16 to 19 and

for black youth aged 20 to 24. The corresponding variables for the labor force participation rates of white youth, which are again assumed to represent demand factors, are positive and highly significant.

Second, we find that the results are similar when various controls for high school or college enrollment proportions are included in the model. (These results are available from the authors.) We have not attempted, however, to explain the connections between demand conditions and the decisions about schooling and market work. The models in which enrollment variables are not included are meant to estimate the net effect on hours worked without regard to how schooling is affected.

Third, the effects of the wage variable and of the area unemployment rate also support the finding of a positive response in black youth labor supply to better demand conditions. The cumulative effects of a one- standard-deviation increase in wages and in white hours worked, and of a one-standard-deviation decrease in black unemployment, in the segregation index, and in the percentage of black families on welfare would increase the average of black hours of work by nearly 40 percent. Finally, we replicate a suitably modified version of this model with individual data from the 1980 census, and we find results that are consistent with the main conclusions from the aggregate data. We discuss these results next.

Results of Statistical Analysis with Individual Data

Two measures of the labor supply of individual young black men are used

in our analysis with the 1-in-100 Public Use Sample of the 1980 census. One is the young man's labor force participation status in the census week in April 1980. The second is the number of hours the individual worked in 1979. Labor force participation is a categorical variable, equal to one if the person is in the labor force (employed or unemployed) and equal to zero if the person is not in the labor force. It reflects the offered supply of labor. Hours worked last year conveys additional information about the amount of work, but only offered labor supply that is purchased by the employer enters into its definition. Hours of work is defined as the number of weeks worked in 1979 multiplied by the respondent's report of his usual hours worked per week in 1979.

These individual records allow us to estimate models of work behavior for separate age groups, for those who are enrolled (or not enrolled) in school, and to use person-specific measures of the young man's age, family income (if he lives with his family), and whether he lives in a single-parent family where his mother is the head of the family. In addition to these person-specific variables, we include the following SMSA variables from our aggregate analysis: the average hours worked by young white men, the average wage received by young white men, the unemployment rate for the black civilian labor force, the size of the black population, and the segregation index. These SMSA variables permit tests for consistency with their performance in the aggregate analysis.

The models specified in columns 1 through 4 in Table 8 have labor force participation in the census week as the dependent variable, and specifications 5 through 9 have hours of work in 1979. Each dependent variable is estimated for

Table 8

Ordinary Least Squares (OLS), Probit, and Tobit Estimates of Individual and Market Determinants of Labor Force Participation (LFP) and Hours Worked for a Sample of Young Black Men Aged 16-21 from the 1980 Census[a]

Coefficients, Standard Errors (in Parentheses), and Elasticities at the Means (in brackets)[b] for the Independent Variables

	Dependent Variable, Statistical Model, All Youth and Youth in Families[c]								
	LFP in Census Week, 1980 (OLS) 1	Same as 1 for Youth in Families 2	LFP in Census Week, 1980 (Probit) 3	Same as 3 for Youth in Families 4	Hours Worked 1979 (OLS) 5	Same as 5 for Youth in Families 6	Hours Worked 1979 (Tobit) 7	Same as 7 for Youth in Families 8	Hours Worked, 1979, for those Who Worked (OLS) 9
Constant	-.197	-.152	-1.996***	-1.850***	-1784***	-1716***	-1825***	-1760	-1743***
	(.169)	(.183)	(.496)	(.534)	(230)	(239)	(395)	(437)	(343)
Average annual hours worked, young white men[d]	.026***	.027***	.081***	.082***	42.5***	34.7***	45.9***	38.7**	27.1*
	(.008)	(.008)	(.022)	(.024)	(10.2)	(10.6)	(18.1)	(19.8)	(15.6)
	[.36]		[.44]		[.56]		[.37]		[.09]
Average wage of young white men	.012	-.011	.033	-.037	37.4*	18.8	-1.7	-36.4	73.4**
	(.016)	(.017)	(.048)	(.052)	(21.8)	(22.9)	(36.9)	(40.8)	(31.5)
	[.12]		[.13]		[.35]		[0]		[.17]
Black unemployment rate (%)	-.007***	-.007***	-.020***	-.019**	-9.5***	-10.8***	-20.8***	-22.2***	-9.7**
	(.002)	(.003)	(.007)	(.008)	(3.2)	(3.4)	(5.6)	(6.4)	(4.6)
	[.18]		[.20]		[.22]		[.35]		[.06]
Black population (log)	-.023***	-.026***	-.069***	-.077***	-16.0	-10.4	-114.1***	-105.5***	8.0
	(.009)	(.009)	(.026)	(.028)	(11.8)	(12.3)	(20.4)	(22.5)	(17.6)
	[.25]		[.32]		[.39]		[.15]		[0]
Index of segregation	.001	.001	.003	.003	-5.8	-5.6	-6.2	-8.7	-9.5
	(.004)	(.005)	(.013)	(.014)	(5.9)	(6.2)	(10.6)	(11.4)	(9.0)
	[0]		[.01]		[.03]		[0]		[.01]

-Table, continued-

Table 8, Continued

	Dependent Variable, Statistical Model, All Youth and Youth in Families[c]								
	LFP in Census Week, 1980 (OLS) 1	Same as 1 for Youth in Families 2	LFP in Census Week, 1980 (Probit) 3	Same as 3 for Youth in Families 4	Hours Worked 1979 (OLS) 5	Same as 5 for Youth in Families 6	Hours Worked 1979 (Tobit) 7	Same as 7 for Youth in Families 8	Hours Worked, 1979, for those Who Worked (OLS) 9
Age of young man	.054***	.057***	.153***	.160***	130.7***	125.8***	201.2***	193.0***	128.6***
	(.005)	(.006)	(.015)	(.017)	(7.0)	(7.7)	(12.7)	(14.6)	(10.6)
	[2.17]		[2.47]		[4.94]		[5.00]		[1.24]
Mother is head of family	-.080***	-.066***	-.235***	-.191***	-134.8***	-86.7***	-288.5***	-162.5***	-86.1***
	(.015)	(.018)	(.046)	(.054)	(20.9)	(24.1)	(36.7)	(43.1)	(31.7)
	[.07]		[.09]		[.11]		[.36]		[.01]
Enrolled in school	-.279***	-.258***	-.750***	-.690***	-317.5	-263.3***	-533.2	-502.1***	-408.4***
	(.018)	(.020)	(.051)	(.058)	(24.5)	(26.4)	(41.6)	(47.7)	(33.3)
	[.37]		[.30]		[.40]		[.68]		[.10]
Family income ($000's)		.0019**		.0053**		1.7*		6.3***	
		(.0007)		(.0021)		(.9)		(1.8)	
		[.07]		[.04]		[.06]		[.13]	

Note: Definitions, sources, means, and standard deviations of variables are given in Appendix 2. Two-tail level of statistical significance: *** = significant at .01 level, ** = .05, * = .10.

[a]The records of the young men constitute a stratified random sample from the records of all SMSAs large enough to provide aggregative variables. The sample is overweighted with smaller SMSAs to permit wider variation in the aggregative SMSA variables without increasing the sample size to such an extent that the nonlinear models would be too expensive to calculate. We use 3,707 observations in models 1, 3, 5, and 7; 3,140 in models 2, 4, 6, and 8; 1,963 in model 9.

[b]Elasticities at the mean are computed for the probit and tobit estimates by calculating the percentage changes in the dependent variables with respect to a small unit of change in the independent variable, evaluated at the means of all the independent variables.

[c]"Youth in families" are young men who live with at least one parent who is the head of the family. These observations permit a measure of family income for models 2, 4, 6, and 8.

[d]Average annual hours worked by young white men is measured in units of 100. The mean is 6.33, which represents 633 hours of work per year.

two samples. The full sample consists of 3,707 young black men aged 16-21 who are not institutionalized, not in the military, not disabled, and who live in one of the 94 SMSAs for which we have our aggregate variables. The few persons for whom our calculation of hours worked exceeded 3,120 per year were excluded on grounds that the hours indicate unacceptable errors in reporting. We also use a second, smaller sample that excludes 567 persons who do not live with a family in which at least one parent is listed as head of the family. This sample of 3,140 young men is used to test for the effect of family income on the individual's labor supply. The measure of family income excludes the earnings of the young man.

Each dependent variable is also estimated with two different models, an ordinary least squares (OLS) regression model and a nonlinear model using maximum likelihood estimation. One nonlinear model, the probit, allows for the boundaries of 0 and 1 for labor force participation. The other nonlinear model, the tobit, allows for the lower bound of zero and the bunching of observations at zero for hours of work. The OLS regressions are easy to interpret and, it turns out, show results that are similar to those from the more appropriate nonlinear models. We have computed elasticities for the three estimation models, evaluated around the means of the independent variables, to facilitate the comparisons of the effects of the independent variables on the dependent variable. The elasticities are shown in brackets in the table.

The SMSA variable to which we have given most attention, the average hours worked by white men, has a significant positive effect on both the probability that a young black man is in the labor force and on his hours of work. Its

elasticity is .44 in the probit relation (specification 3) and .37 in the tobit relation (specification 7). Thus, a 50 percent increase in the demand-indicator of average hours worked by white youth would be predicted to increase the black labor force participation rate from, say, its mean of .46 to approximately .56 and to increase the black hours worked from its mean of 485 hours to 575 hours.

Among the other SMSA variables that represent demand factors, at least in part, the black unemployment rate and the size of the black population have statistically significant effects of the expected sign, while the average market wage and the segregation index are insignificant in both statistical and practical terms.

The magnitudes of the effects of these SMSA variables on the individual's hours of work are smaller than their effects in Table 7 on the average hours worked by black youth. It is not clear which set of estimates is more accurate for purposes of policy interpretation, but the disaggregative relationships may be biased downward because the SMSA variables are surely error-laden as measures of, for example, the wage facing an individual selected at random. By contrast, the SMSA wage variable may be considerably more accurate as the wage that faces the "representative" or "average" person in the SMSA.

The person-specific variables are, we may assume, accurately measured for each person, and they are highly significant and have the expected sign. Age and school enrollment have large effects on market work of young people. We also see that a young black man living in a family headed by his mother is less likely to be working and, if working, is likely to be working fewer hours than

if he is in a family with both parents present. Presumably this reflects a mix of demand and supply factors—low skills, living in a poor neighborhood, and, possibly, disincentives if the family is receiving public assistance payments.[17]

Family income has a positive effect on the young person's labor supply, holding constant the other variables in the model. It is statistically significant, but so small as to be unimportant. From specification 8, for example, we see that an increase in family income of $1,000, a 6 percent increase at the mean, would lead to an increase of only 4 hours of work per year.

We have estimated many other relationships besides those shown in Table 8, using different age groups, additional independent variables, different measures of the dependent variable, and different estimation techniques. Space considerations restrain us from reporting these results, but we should mention that the largest demand effects were estimated for the younger age groups and for the youth who are enrolled in school. In one respect this result is disturbing, because the young black men who are not enrolled are arguably most needful of improvement in their labor market performance. On the other hand, there is a plausible theoretical explanation for the positive interaction between the demand variables and enrollment; namely, that those enrolled in school are allocating their time between schooling and work as well as between "leisure" and work and, therefore, will show a greater response to incentives at the margin. The general response

[17] We were not able to use the amount of government transfer payments received by the family of the young person, because although total family income for the young person is reported on the youth's record, a breakdown of family income into components such as transfer payments is not part of the young person's record.

of labor supply to the demand variables shown in Table 8 is, however, consistent with our earlier results.

QUALIFICATIONS AND SUGGESTIONS FOR FURTHER ANALYSIS

The time series decline in black youth employment since 1960 is not readily explained by the demand hypothesis as we have stated it. Work rates of white youth have increased while those of blacks have decreased. Welch examines the time series and reports several tests of demand variables that failed to explain the recent declining trend of black youth employment.[18] However, the racial divergence in employment trends may be explained by such supply-side factors as the rise in schooling among blacks, the decline in two-parent families, the increased entry of blacks into the armed forces, and other factors. If so, the case for demand policies, such as job creation, wage increases, and reductions in unemployment, remains promising.

The industrial structure of the SMSAs, which we view as the underlying demand-side factor driving our results, remains to be tested directly, although it may be difficult to obtain a good measure of an SMSA's composition of those industries that increase employment of youth. Nevertheless, using two bodies of data, one aggregated and one disaggregated, we have found that several variables representing variation in demand for the labor of black youth across SMSAs have important effects on the hours worked or on labor force participation of black young men. The average hours worked by white young men, the wage earned by white young men, and the area unemployment rate all represent demand factors

[18]Welch, "The Employment of Black Men."

in the context of our statistical model. We can think of no supply-side interpretation for our results. If we are correct about the employment resonsiveness of black youth to demand shifts, a variety of policy options are opened.

APPENDIX 1: Definitions, Means, Standard Deviations, and Sources for Aggregate SMSA Variables

The summary statistics are calculated for the 94 SMSA's used in the aggregate regressions in Table 7, except where indicated otherwise.[a]

Variable	Mean	Standard Deviation	Notes, Sources
Hours worked, young white men	643.9	104.7	Average hours worked per year of white men aged 16-21 in SMSA. 1980 Census, Detailed Characteristics, PC80-1-D, Table 214.[b]
Hours worked, young black men	278.6	91.9	Average hours worked per year of black men aged 16-21 in SMSA. 1980 Census, Detailed Characteristics, PC80-1-D, Table 214[b]
Black unemployment rate (percent)	11.8	3.9	Civilian unemployment rate for all blacks aged 16+ in SMSA. 1980 Census, Detailed Characteristics, PC80-1-D, Table 213.
Black population (thousands)	191	298	Total black population in SMSA. 1980 Census, U.S. Summary, PC80-1-C1, Table 248.
Total population (thousands)	1,191	1,361	Total population of SMSA. 1980 Census, U.S. Summary, PC80-1-C1, Table 248.
Index of segregation	2.95	1.83	Proportion of blacks in central city of SMSA divided by the corresponding proportion of whites. 1980 Census, U.S. Summary, PC80-1-C1, Table 248.[c]
Black households receiving public assistance income (percent)	20.8	4.6	Percent of black households in SMSA receiving Public Assistance Income. 1980 Census, Detailed Characteristics, PC80-1-D, Table 243(A).[d]

Appendix 1 Continued

Variable	Mean	Standard Deviation	Notes, Sources
Males aged 16-19 as a percent of male population aged 16 and over	5.7	0.7	Male youth (black and white) as a percent of total labor force in the SMSA. 1980 Census, Detailed Characteristics, PC80-1-D, Table 213.
Years of schooling of black men, aged 20-24	14.1	.4	Mean years of education completed for black men aged 20-24 in SMSA. Calculated from 1980 Public Use Tapes.
Years of schooling of white men, aged 20-24	14.9	.4	Mean years of education completed for white men aged 20-24 in SMSA. Calculated from 1980 Public Use Tapes.
Wage of young white men	$4.51	$.57	Average wage of all white youth aged 16-24 in SMSA. Calculated from 1980 Public Use Tapes.[e]
Enrollment of young white men[f]	.59	.10	Proportion of white male youth aged 18-19 enrolled in school. Calculated from 1980 Public Use Tapes.
Enrollment of young black men[f]	.57	.10	Proportion of black male youth aged 18-19 enrolled in school. Calculated from 1980 Public Use Tapes. Calculated over only the 44 SMSA's for which sample size permitted reliable calculations.

[a]The two principal references for the aggregate statistics for SMSAs are:

1. 1980 Census of Population, Vol. 1: Characteristics of the Population, Chapter C: General Social and Economic Characteristics, Part 1: U.S. Summary.

Notes to Appendix 1 Continued

2. 1980 Census of Population, Vol. 1: Characteristics of the Population, Chapter D: Detailed Population Characteristics, state book (e.g., Part 38, Oklahoma).

[b]Calculated as follows. The average of weeks worked in 1979 was calculated over all youth using the number in each discrete weeks-worked category, including zeros. This average of weeks worked was multiplied by the mean hours usually worked per week of workers to obtain the average annual hours worked for all youth.

[c]Calculated as the number of black persons in the central city (as defined by the Census) divided by the number in the entire SMSA, all divided by the equivalent number calculated for white persons.

[d]The census definition of public assistance income is: "(1) Supplemental Security Income payments made by federal or state welfare agencies to low income persons who are aged, blind, or disabled; (2) payments to families with dependent children, and (3) general assistance."

[e]See footnote 11 in text for details of the variable's construction. Other wage variables were also experimented with, including simple mean and median measures, as well as the reported "weighted mean" measure, each calculated over all workers as well as over full-time, full-year workers only. Results were generally similar across all of these measures, except for our trials with a wage variables deflated by price indexes. The only price index that we used that was available for all 94 SMSAs was the "median selected monthly owner costs (dollars)" for owner-occupied house with a mortgage from the 1980 Census of Housing, Vol. 1, Chapter B, Part 1, Table 78. Other price series based on "intermediate family budget" (Monthly Labor Review, November 1979, p. 28), and "lower budget for a 4-person family" (Monthly Labor Review, July 1976, p. 41) were also tried, but these are available for only about 30 of the SMSAs that we used.

[f]These variables were used in regressions that are not reported in Table 7.

APPENDIX 2: Definitions, Means, and Standard Deviations of Variables from the Public Use Tapes of the 1980 Census

These variables appear only in the estimation models in Table 8, using individual records of young black men, aged 16-21. The statistics are calculated for 3707 observations, except for family income, which is calculated for the 3140 observations where the black youth were living with at least one parent. The SMSA aggregate variables used in the estimation models are presented in Appendix 1.

Variable	Mean	Standard Deviation	Definition and Source[a]
Total hours worked	484.6	706.2	Number of weeks worked times "usual hours worked" in 1979. P95, P97.
Labor force participation	.46	.50	Assigned the value 1 if the individual was employed or unemployed (and "actively looking for work") in the census survey week; 0 otherwise. P81.
Family income in 1979	$16,540	$12,700	Total family income minus the youth's earnings, in 1979. H112, P101, P106, P111.
Enrolled in school	.61	.49	Assigned the value 1 if the individual was enrolled at time of survey; 0 otherwise. P39.
Age of young man	18.3	1.7	Individual's current age (in 1980). P8.
Mother is head of family	.40	.49	Assigned the value 1 if the individual is in a family with a mother, but no father, present; 0 otherwise. H10H.

[a]H and P refer to the variables in the Households and Person portions of the census Public Use files. See Census of Population and Housing, 1980: Public-Use Microdata Samples, Technical Documentation, U.S. Department of Commerce, Washington, D.C., 1983.